American Society for Testing Materials BULLETIN

ISSUED BI MONTHLY

Review of A.S.T.M. Research Activities

An up-to-date, concise summary of the more than 110 research projects on many materials and tests being conducted under Society auspices.

Also:

Standards of Interest in Construction

New York District Meeting to Discuss Timber

OCT 29 1932

October, 1932

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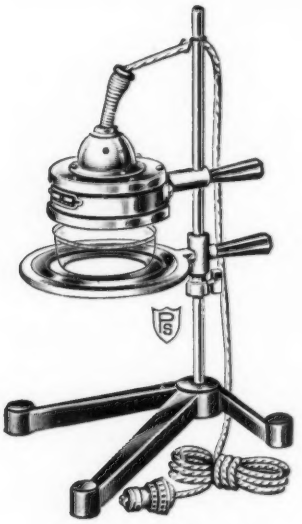

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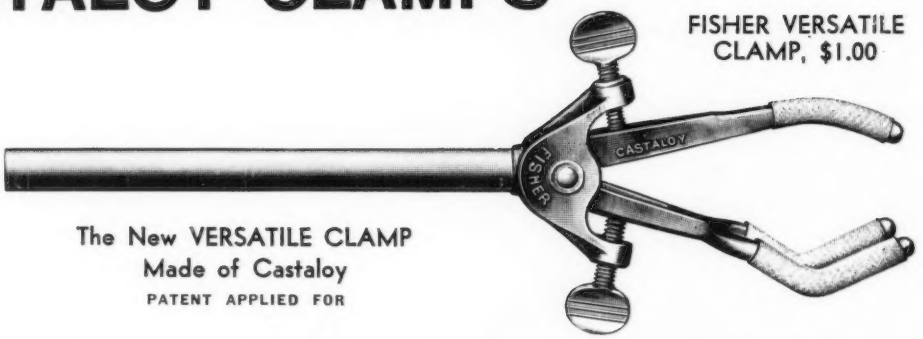

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American Society for Testing Materials

BULLETIN

ENGINEERS' CLUB BUILDING 1315 SPRUCE STREET PHILADELPHIA, PA.

NUMBER 58 OCTOBER 21, 1932

A.S.T.M. Research Activities (1932-1933)

RESEARCH—a continual search for, and the promotion of, new knowledge of engineering materials—is one of the two important objectives of the Society, the other being standardization. These activities which go hand-in-hand, since new developments today become the standards of tomorrow, give to the A.S.T.M. a unique position among technical societies.

Without continued research, progress would cease. To supply this new information upon which future standardization may be based is the constant work of A.S.T.M. Committees. The research work of A.S.T.M. Committees in studies of materials and the allied testing field is reviewed annually by Committee E-9 on Research. This review in the form of a summary of the 122 research projects on which A.S.T.M. Committees are at work is given below.

The summary has been divided into two parts. Part I—Research on Properties of Materials, includes 50 active committee projects initiated primarily to extend and amplify the knowledge of the properties of materials; and Part II—Research on Methods of Testing, includes 72 committee projects devoted to methods of testing in connection with which are conducted investigations (sometimes of considerable magnitude) that may lead to the preparation of standard test methods and which are not intended primarily to promote knowledge of materials.

The summary includes information not heretofore generally available, except after laborious reference to reports of 60 research and standing committees. Except for several new investigations not as yet reported upon, reference is made in every case to the latest report on each project. Reports now appearing in preprints prepared for the 1932 annual meeting will be published in the 1932 *Proceedings* which publication should be referred to when the *Proceedings* become available early in December.

Part I—Research on Properties of Materials

Ferrous and Non-Ferrous Metals

Atmospheric Corrosion Tests of Uncoated Sheets (Committee A-5).—Exposure tests of bare (uncoated) steel and iron sheets under atmospheric conditions at Pittsburgh, Pa., Fort Sheridan, Ill., and Annapolis, Md.

Tests completed at Pittsburgh in 1923 and at Fort Sheridan in 1928, see *Proceedings*, Vol. 23, Part I, p. 147 (1923); Vol. 28, Part I, p. 152 (1928), respectively. Annapolis tests still in progress, see preprint, 1932 Report of Committee A-5.

Atmospheric Corrosion Tests of Metallic-Coated Products (Committee A-5).—Comprehensive field tests at several locations, representing varying atmospheric conditions, on metal products coated by various processes, such as, hot-dipped galvanized sheets; wire products; structural shapes and castings; sherardized, electro-zinc plated, cadmium plated and calorized castings; zinc-coated sprayed castings and structural shapes; terne and lead-coated sheets. An important purpose of the tests is to correlate results of service with various types of laboratory tests including accelerated tests. Test racks exposed at five locations. Results reported of first inspections at all test locations, see *Proceedings*, Vol. 31, p. 181 (1931).

Corrosion Tests of Electroplated Coatings (Committee A-5).—An extension of tests of plated coatings on hardware mentioned above. Specimens will be plated of zinc, cadmium, copper, nickel, chromium or combination of these metals, coatings to be produced under controlled, defined conditions. Samples exposed in five outdoor locations with parallel laboratory and accelerated exposure tests. See preprint, 1932 Report of Committee A-5.

Total Immersion Tests on Uncoated Sheets (Committee A-5).—Tests on bare (uncoated) steel and iron sheet totally immersed in acid mine water at Calumet, Pa., in saline water at Annapolis, Md., in city water at Washington, D. C., in sea water at Key West, Fla., Portsmouth, N. H., and Port Arthur, Tex., also tests in open sea water to determine the effect of corrosion on copper-steel pipe and on steel ship plate, with and without copper, when riveted with rivets of iron and steel with varying copper contents.

Tests completed at Calumet in 1921, at Washington in 1928, and at Annapolis in 1930, see *Proceedings*, Vol. 21, p. 157 (1921); Vol. 28, Part I, p. 160 (1928); Vol. 30, Part I, p. 223 (1930), respectively. For report on other tests still in progress, see preprint, 1932 Report of Committee A-5.

Accelerated Corrosion Tests (Committee A-5).—Study of various methods of accelerated corrosion tests, with particular reference to their application to metallic-coated products. Related to the atmospheric corrosion tests mentioned above. See preprint, 1932 Report of Committee A-5.

Metal Culvert Corrosion Tests (Committee A-5).—A study of the corrosion of corrugated flexible metal culvert—in the beginning from a service standpoint as a material and not as a structure. Later, it is planned to determine the suitability and comparative value of the different types of base metals used in flexible culvert construction and under varying soil and other conditions. See preprint, 1932 Report of Committee A-5.

Corrosion of Malleable Iron (Committee A-7).—Study of corrosion-resisting properties of malleable iron pertaining particularly to castings for overhead trolley construction, see preprint, 1932 Report of Committee A-7.

Corrosion Tests of Stainless Steels (Committee A-10).—Laboratory corrosion tests of stainless steels; at present restricted to four typical stainless steels, namely, (1) 18-per-cent chromium, 8-per-cent nickel alloy; (2) 17-per-cent chromium alloy; (3) 13-per-cent chromium alloy with 0.08 to 0.12-per-cent carbon, annealed at 1300° F., and (4) 13-per-cent chromium alloy with 0.08 to 0.12-per-cent carbon, annealed at 1700° F. and three corrosion tests of the inspection type, namely, the Du Pont acid-immersion test, the Navy Department salt-spray test and the copper-sulfate stain test. See preprint, 1932 Report of Committee A-10.

Standardization of the Practice of Corrosion-Resistance Testing (Committee B-3).—A study of four corrosion tests: namely, total immersion, alternate immersion, spray and accelerated electrolytic. Six non-ferrous metals tested by a number of cooperating laboratories, each following carefully prescribed methods. Detailed description of procedure for each test, preparation of solutions and specimens, materials used and critical discussion of each test, see preprint, 1932 Report of Committee B-3.

Atmospheric Corrosion of Non-Ferrous Metals and Alloys (Committee B-3).—Comprehensive field tests at locations representing varying atmospheric conditions on a variety of non-ferrous metals and alloys in the form of rolled sheet or strip. Corrosion over 25-year period to be measured. Materials and test locations described, see preprint, 1932 Report of Committee B-3.

Corrosion of Non-Ferrous Metals and Alloys in Liquids—Field Tests (Committee B-3).—Testing in the field, metals in several common solutions under conditions representative of those in use in industrial processes. Metals to be limited to those which may reasonably be expected to prove practicable for use in each process. The four solutions to be used are: NaOH, HCl, NaCl and H_2SO_4. See preprint, 1932 Report of Committee B-3.

Galvanic and Electrolytic Corrosion of Non-Ferrous Metals and Alloys (Committee B-3).—Study of galvanic effects (that is, effect of contact between dissimilar metals upon the rate of corrosion of each) at locations representing varying atmospheric conditions on galvanic couples of metals, used commercially under conditions of tests, and electrolytic action on couples of metals and alloys in hot water, sea water, NaOH and H_2SO_4. Includes study of stainless steel in contact with various non-ferrous metals. See preprint, 1932 Report of Committee B-3.

Relative Life of Various Screen Wire Cloths (Committee D-14).—To determine the relative life of the higher-grade screen wire cloths when exposed to various atmospheric agencies such as corrosion and wind, as they exist in different localities and climates, so that purchasers of such material may make an economic selection best suited to their particular conditions. Report of failures after four years' exposure, and analyses of SO_2 contents of atmospheres at test locations reported by G. W. Quick, "Atmospheric Exposure and Laboratory Tests on Non-Ferrous Screen Wire Cloth," see *Proceedings*, Vol. 30, Part I, p. 863 (1930). Progress report, unpublished, made in 1932.

Embrittlement of Hot-Dipped Galvanized Structural Steel (Committee A-5).—Investigation of the effect of cold working on the physical properties of structural steel before and after galvanizing by the hot-dipped process, to determine the extent of apparent embrittlement, its cause and remedies therefor. The 1931 report of Subcommittee X on Embrittlement Investigation, *Proceedings*, Vol. 31, Part I, p. 211 (1931) gives history of project with selected bibliography. The 1932 report includes recommended practice for safeguarding against embrittlement of hot-galvanized structural steel products and procedure for detecting embrittlement and official report of investigation in paper by Samuel Epstein, "Embrittlement in Hot-Galvanized Structural Steel," see reprint pamphlet, also *Proceedings*, Vol. 32, Parts I and II (1932).

Embrittlement of Malleable Iron (Committee A-7).—Study of cause of galvanizing embrittlement of malleable-iron castings, see preprint, 1932 Report of Committee A-7.

Investigation of the Effect of Phosphorus and Sulfur in Steel (Joint Committee).—An investigation by a joint committee under the auspices of eleven national organizations, to study the effect of residual and added sulfur and phosphorus in steels of the following classifications: low-carbon steels, such as rivet steel; medium-carbon structural steels; forging steels; rail steels; and steel castings. Summary of progress presented in 1928, see *Proceedings*, Vol. 28, Part I, p. 95 (1928).

Correlation of Properties of Iron Castings and Test Bars (Committee A-3).—A study of the relationship of properties of iron castings with the properties of coupons attached to castings and of separately cast test bars. See *Proceedings*, Vol. 31, Part I, pp. 151 to 170 (1931). Revised specifications prepared for gray-iron castings classifying cast irons in respect to tensile strength, see preprint, 1932 Report of Committee A-3.

Impact Testing of Cast Iron (Committee A-3).—A study of the various types of single-blow and repeated impact test, to determine impact values of cast iron and to ascertain the type of test most suitable to determine such values. Progress report, see preprint, 1932 Report of Committee A-3.

Study of Magnetic Properties of Steel and Their Correlation with Other Properties and with General Performance (Committee A-8).—Scope of investigation as described in title. Investigations to study the relationship between magnetic properties and toughness as indicated by results of impact test. Tests carried out on a 1.5-per-cent chromium steel of typical composition, such as used in ball bearings, recently completed and are reported in paper "Relation Between Magnetic Properties, Impact Strength and Hardness" by Haakon Styri, *Proceedings*, Vol. 31, Part II, p. 94 (1931), see also Report of Committee A-8, Vol. 31, Part I, p. 245 (1931).

General Study of Properties of Babbitt Metal (Committee B-2).—This project includes determination of physical properties of white-metal bearing alloys in the A.S.T.M. standard and tentative standards; correct pouring temperatures of babbitt metals; effect of ratio of length to diameter in compression testing of babbitt metal; and effect of impurities on the properties of babbitt metal, such as friction, wearing properties, fluidity, brittleness and amount of drossing. Investigation partially completed, active for certain portions. Account of latest researches at U. S. Bureau of Standards given in paper by H. K. Herschmann and J. L. Basil on "Mechanical Properties of White-Metal Bearing Alloys at Different Temperatures" describing laboratory studies and data on service tests. See preprint of paper presented at 1932 annual meeting, also, 1932 Report of Committee B-2.

Properties of Copper-Base Alloys in Ingot Form.—A study of the properties of selected compositions of copper-base alloys within composition ranges specified in the A.S.T.M. Tentative Specifications for Copper-Base Alloys in Ingot Form for Sand Castings (B 30 – 32 T). This research is being carried on by a research associate placed at the Bureau of Standards by the Non-Ferrous Ingot Metal Institute. Committee B-5 is cooperating in this work. Researches reported in paper by H. B. Gardner and C. M. Saeger, Jr., "Factors Affecting the Physical Properties of Cast Red Brass (85 Cu, 5 Zn, 5 Sn, 5 Pb)," see preprint of paper presented at 1932 annual meeting.

Life Test for Durability of Electrical-Resistance Wire at High Temperatures (Committee B-4).—To arrive at the best methods for determining the durability of resistance wire at high temperatures with due regard to service conditions. See preprint, 1932 Report of Committee B-4.

Elastic Properties of Electrical-Resistance Alloys (Committee B-4).—A study of the elastic properties of electrical-heating, electric-resistance and electric-furnace alloys at temperatures up to 1000° C. A study is being made of a special bend test. See preprint, 1932 Report of Committee B-4; also paper by Howard Scott "High-Temperature Characteristics of Metals Revealed by Bending," *Proceedings*, Vol. 31, Part II, p. 129 (1931).

Investigation of Aluminum and Zinc-Base Die-Casting Alloys (Committee B-6).—An extensive investigation of die-casting alloys as to composition, strength, hardness, brittleness and resistance to corrosion; also finishing properties of die castings. Studies of 13 commercial compositions of aluminum-base alloys produced by 5 plants and on 9 zinc-base alloys as cast by 6 producers being made. The investigation will supply dependable information on the properties of alloys suitable for die castings and will lead to the formulation of specifications based either on the alloys tested or on alloys developed as a result of the investigation. Current progress includes tentative specifications for aluminum-base and zinc-base alloy die castings; also tables of data showing properties of test specimens after one year exposure; also an analysis of data on aluminum-base alloys. See report of Committee B-6, *Proceedings*, Vol. 32, Part I (1932).

Investigation of Tin and Lead-Base Die-Casting Alloys (Committee B-6).—Project in preliminary stage of planning; expected to cover representative lead-base and tin-base alloys in commercial production. See 1931 Report of Committee B-6 containing paper by F. J. Tobias, "Lead-Base and Tin-Base Alloys for Die Casting," *Proceedings*, Vol. 31, Part I, pp. 263, 280 (1931); also progress report, see preprint, 1932 Report of Committee B-6.

Research on Yield Point of Structural Steel (Research Committee).—The committee will consider (1) what is the range of yield point of structural steel (that is, low-carbon, medium-carbon, silicon and nickel steels), due to a number of important factors, when furnished under specifications; and (2) what testing procedure will insure sufficiently correct determination of the yield point at minimum expense. The committee has reported four series of tests on Item (2) dealing mainly with effect of speed of movable head on yield point of structural steel. See *Proceedings*, Vol. 27, Part I, p. 646 (1927); Vol. 28, Part I, p. 105 (1928); Vol. 29, Part I, p. 101 (1929); and Vol. 31, Part I, p. 136 (1931). Report of tests on specimens from structural steel shapes, Vol. 30, Part I, p. 133 (1930), contains data on range in yield point, ratio of yield point to ultimate strength and effect of location of test specimen.

Fatigue of Metals (Research Committee).—The broad purpose of the committee is to summarize and correlate the work that various laboratories are doing in connection with the fatigue of metals and to study the relationship between fatigue failure and other strength properties of metals and their atomic and metallographic structure. The committee has prepared abstracts of

(*Continued on page 9*)

New York District Meeting November 17

Symposium on Timber to be Technical Feature

A "Symposium on Timber as an Engineering Material" is to be the technical feature of the first meeting in the 1932–1933 season of the members in the New York District. This meeting, sponsored by the New York District Committee, will be held on Thursday, November 17, at the Hotel Governor Clinton. It is planned to have the presentation of the technical papers comprising the Symposium begin at 5.15 p. m. An informal dinner is scheduled for 7 p. m., followed by the showing of a special film.

The Symposium on Timber has been arranged by A.S.T.M. Committee D-7 on Timber, under the chairmanship of Dr. Hermann von Schrenk, Consulting Timber Engineer, St. Louis. Outstanding authorities will participate in the session. A list of papers and speakers follows:

Symposium on Timber as an Engineering Material

1. The Viewpoint of the Railroads—J. V. Neubert, Chief Engineer, Maintenance of Way, New York Central Lines, and President, American Railway Engineering Association.
2. The Viewpoint of the Architect—E. J. Russell, President, American Institute of Architects.
3. The Viewpoint of the Manufacturer—F. P. Cartwright, Chief Engineer, National Lumber Manufacturers Association.
4. The Use of Wooden Piling, Especially for Foundations—J. F. Seiler, Field Engineer, Service Bureau, American Wood Preservers Association.
5. Protection of Timber Against Deterioration—Hermann von Schrenk, Consulting Timber Engineer, and Chairman, Committee D-7 on Timber.

A motion picture, obtained especially for the meeting, will be shown following the dinner. This film deals with the preservation of wood and was prepared by the British Wood Preservers Association. Its first release in America will be at this meeting. All A.S.T.M. members, their friends and others interested in the subject to be discussed, are cordially invited to attend.

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Society Joins Chicago Engineering Council

For some time consideration has been given by prominent engineers in the Chicago area to a means whereby the many technical societies and local sections there might coordinate their activities in some way. This has led to the formation of the Chicago Engineering Council, comprising several of the local sections and societies, of which the A.S.T.M. Chicago group is one.

The purpose of the Council is two-fold: First, to consider matters of general interest to all engineering and allied technical professions to secure unified action where desirable and avoid overlapping of effort; and second, to afford a common meeting ground for the interchange of views and to develop better understanding and friendship. The Council will not have the power to determine the action to be taken by any member society but it is expected that through discussion and council, unified effort will be obtained.

The following members of the Chicago District Committee have been appointed to represent the Society on the Council:

H. G. Farmer, Technical Service Director, Universal Atlas Cement Co.
H. H. Morgan, Manager, Rail and Fastenings Dept., Robert W. Hunt Co.
F. A. Randall, Structural Engineer and Chairman, Board of Governors, American Specification Institute.
T. L. Condron, Condron & Post.
L. I. Shaw, Assistant Superintendent of Manufacturing Development, Western Electric Co., Inc.

1933 Annual Meeting

Several important engineering topics are tentatively scheduled for discussion at the 1933 Annual Meeting to be held June 26–30 at the Hotel Stevens, Chicago. A Symposium on the Physical Properties of Cast Iron is being developed by a committee composed of prominent technologists who are active in the American Foundrymen's Association and the A.S.T.M. This symposium will be the third in the series sponsored jointly by the two societies. Very successful ones have been held on malleable iron castings and on steel castings. The third promises to be of equal significance.

A group of papers also being developed by the Committee on Papers comprises a symposium on the significance of quality and strength tests of concrete. Several other very interesting technical contributions have been suggested and are under consideration. In addition the Society is cooperating in the arrangement of a program for Engineers' Day, in which all of the many engineering and technical societies who will be meeting during the week of June 26 will take part. The program has two objectives: First, to provide that the thousands of visiting engineers may see exhibits which are of special interest to them in the Century of Progress, under special arrangement; second, to bring before the engineers some of the high-lights of engineering contributions to man's progress. Special trips and exclusive programs are to be given at the Century of Progress on Engineers' Day. At a combined banquet in the evening, there will be engineer statesmen of several nations, and world renowned scientists and engineers. As plans for this unique Engineers' Day develop, they will be announced.

The Second A.S.T.M. Exhibit of Testing Apparatus and Equipment will be in progress during the entire week. The Exhibition Hall of The Stevens, with its splendid facilities for working exhibits, has been reserved for this week.

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1933 Regional Meeting in New York

The Regional Meeting of the Society in 1933 is to be held in New York City on March 8. The decision to hold this meeting in the East was influenced by the fact that the annual meeting in 1933 will be held in Chicago. New York City, with an active A.S.T.M. District Committee, seemed the logical choice for a city since no meeting of the Society as a whole has been held there since 1912.

The New York District Committee will make arrangements for the meeting, dinner, etc. A.S.T.M. Committee D-2 on Petroleum Products and Lubricants has assumed the sponsorship of the technical program which is to be a Symposium on Motor Lubricants. The several papers making up the symposium will be given in two sessions, morning and afternoon. Great advances in technical knowledge and production of lubricants have been made in recent years and from the preliminary outline of the technical program, an effectual summing up of these advances will be included. The next BULLETIN will give further details of the meeting.

Group Meetings of Committees Also in New York

It is planned to schedule the 1933 Group Meetings of Committees in New York City during the week beginning March 6. A number of the standing committees have decided to hold their spring meetings as a part of these Group Meetings. Committee officers will soon be given detailed information of the plans for this series of meetings.

AMERICAN SOCIETY FOR TESTING MATERIALS

BULLETIN

Issued Bi-Monthly

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Number 58 October 21, 1932

Intrinsic Value of A.S.T.M. Publications

BY comparing current Society publications with those of several years ago the members will appreciate how the publications have been growing in volume from year to year. Not only have the regular publications increased in size, but new publications have been added. Each Book of Standards is larger than its predecessor; the *Proceedings* contain more reports and papers—all because the annual meetings bring out an increased quantity of material of value. To these have been added the A.S.T.M. Bulletin, Index to Standards, regional meeting papers, and many special publications.

It is the intrinsic value of the publications, however, and not their increasing size, that is significant. The A.S.T.M. publications are of real value for they represent information for which engineers have felt a need and which they have made a concerted effort to supply. They contain results of investigations sponsored by committees or individuals for which industry has been willing to contribute many thousands of dollars. They contain standard specifications and methods of test designed to simplify our business relations. They contribute to our store of knowledge of the properties of engineering materials. They are the crystallization of ideas and conclusions reached after years of effort. They are the only means of disseminating and making available the information and knowledge compiled. Many of the symposiums sponsored by the Committee on Papers and Publications are designed primarily to correlate from widely scattered sources, information on a given subject.

There was recently forwarded to the members a descriptive folder entitled "A.S.T.M. Publications" which gives concisely an idea of the contents of the regular and special publications. This folder, together with the various indexes, such as the Index to Proceedings and the Index to Standards, gives a picture of the intrinsic value of A.S.T.M. publications. To many of our members the publications represent the chief tangible asset of Society membership. But from the value of the content and the amount of effort which they represent they comprise a valuable tool for the materials engineer and deserve considerable study.

Classes of Members in A.S.T.M.?

A Second Note from President Chapman*

A.S.T.M. members may be classified in various ways. They are divided into Honorary, Life, Sustaining, Corporate, Individual and Junior Members. They are also classified as Producer, Consumer and General Interest Members. All of these classes are recognized by and mentioned in the Constitution, By-laws and Regulations. There is still another method of classification not mentioned in our organic law. They are the *Participating* and the *Observing* members —those who take part and those who look on.

Every person who has ever joined the Society as a regular member was admitted on the same basis as every other member. There is no privileged class. Every member is entitled to participate in the activities of the Society. Not only is every member so entitled, but the Society depends almost wholly upon such participation for its progress in its special field of usefulness. We now have equality of privileges. What we need in order to accelerate the work of the Society and make it still more valuable to industry is greater equality of *participation* in its work by all of its members.

Let us all get out of the Observing Class into the Participating Class.

Clayd M. Chapman

*Editor's Note.—The first in a series of short articles from President Chapman appeared in the July BULLETIN.

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Criticism Invited

This is the time of year when the tentative standards, accepted at the annual meeting, become available and are given widespread distribution. The purpose, of course, for providing a tentative status in our standardization procedure, as indicated on each of the printed tentative standards, is to solicit comments and criticism of which the committee in charge will take due cognizance before recommending final adoption. During this stage the tentative standards are on trial in industry where their entire suitability will be established or desirable modifications indicated.

The publication of proposed standards, however, has a still deeper significance. It is not only that standing committees responsible for these standards wish to have the assistance of industry, but rather that the standards as finally issued will represent a true consensus of industry. The Society and its committees wish to give everyone interested in any A.S.T.M. standard an opportunity to participate in its establishment. A.S.T.M. standards are not merely standards that have been adopted by the American Society for Testing Materials, but standards which have been developed *by industry itself* to fill a definite need. It is only by this means that authoritative standards, which are at the same time practicable, can be established—adequate standards that will be used throughout industry as a basis of purchase, sale and testing of materials. Everyone concerned is invited to submit comments for improvements in the standards. Such comments may be addressed either to the Headquarters of the Society or to the officers of the Committee responsible for the respective standards.

Adoption of Standards and Amendments

The letter ballot on the adoption of (*a*) amendments to By-laws; (*b*) revisions of 6 existing standards; and (*c*) one tentative standard recommended for adoption as standard, ordered at the annual meeting, was canvassed on September 1, 1932 by a Committee of Tellers comprised of Harold Farmer, Chief Chemist, Philadelphia Electric Co. and Alexander Foster, Jr., Vice-President, Warner Co. There were 628 legal ballots cast, and all items were adopted. The official count of the ballots is given below. The difference between the number of ballots and the sum of the affirmative and negative votes for any item represents the number of ballots marked "not voting" on that item:

Items	Affirmative	Negative
AMENDMENTS TO BY-LAWS		
Article I. Members and Their Election:		
1. Revision of Section 4	485	3
2. Revision of Section 2	475	3
REVISIONS OF EXISTING STANDARDS		
Standard Specifications for:		
3. Round and Grooved Hard-Drawn Copper Trolley Wire (B 47 – 30)	121	1
4. Bronze Trolley Wire (B 9 – 30)	112	1
Standard Methods of:		
5. Testing Cement (C 77 – 30)	256	1
6. Test for Distillation of Natural Gas Gasoline (D 216 – 30)	210	0
7. Testing Rubber Products (D 15 – 24)	141	1
Standard Definitions of:		
8. Terms Relating to Materials for Roads and Pavements (D 8 – 18)	298	22
TENTATIVE STANDARD TO BE ADOPTED AS STANDARD		
9. Tentative Methods of Chemical Analysis of Rubber Products (D 297 – 31 T)	144	1

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Correction in "A List of Alloys"

Members of the Society and purchasers of the 1930 *Proceedings*, Part I, and of "A List of Alloys," 1930, reprinted therefrom, are asked to note that the statement appearing on page 367 of the *Proceedings* and on page 35 of the List of Alloys, reading:

"Alclad is Dural, Lautal or Aludur with a skin of pure Aluminum,"

has been found to be erroneous and should be deleted, for the reason that Alclad is a registered trade mark for certain duplex metal products that have no connection with Dural, Lautal or Aludur.

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Third Cement Laboratory Inspection

The Cement Reference Laboratory, a joint project of the Government and A.S.T.M. Committee C-1 on Cement, will soon start a third inspection tour among cement testing laboratories. Those laboratories which desire such inspection should address their requests promptly to the Cement Reference Laboratory at the U. S. Bureau of Standards.

It is expected that laboratories desiring reinspection will refer to the reports of the preceding inspection, remedy the defects therein brought to attention, if any, and advise the Cement Reference Laboratory that the needed improvements will have been made prior to the inspector's visit.

The tolerances for cement testing equipment are contained in the A.S.T.M. Standard Methods of Testing Cement (C 77 – 32). A laboratory can readily check and adjust its equipment for compliance with the specification tolerances, and such action would facilitate the inspector's work.

A.S.T.M. MEMBERSHIP

carries with it the opportunity to keep abreast of the constantly expanding knowledge of materials . . . . brings you results of extensive research on materials and products.

(See page one of this BULLETIN)

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New Tentative Standards Accepted for Publication

On the recommendation of the standing committees within whose province the respective standards lie, Committee E-10 on Standards at a recent meeting accepted for publication four new tentative test methods and eleven revised tentative standards. Four of these are specifications, six are methods of test, and one is a tentative definition of terms. These will be included in the 1932 *Proceedings*, Part I, and will be printed separately. The list follows:

Tentative Methods of:

Testing Laminated Round Rods Used in Electrical Insulation (D 349 – 32 T)
Testing Flexible Varnished Tubing (D 350 – 32 T)
Testing Pasted Mica Used in Electrical Insulation (D 352 – 32 T)
Rockwell Hardness Testing of Metallic Materials (E 18 – 32 T)
Sampling Natural Building Stone and Sample for Testing (D 355 – 32 T)
Tension Testing of Natural Building Stone (D 356 – 32 T)

Tentative Specifications for:

Lap-Welded and Seamless Steel and Lap-Welded Iron Boiler Tubes (A 83 – 32 T)
Fire-Refined Copper Other than Lake (B 72 – 32 T)
Copper-Base Alloys in Ingot Form for Sand Castings (B 30 – 32 T)
Sand Castings of the Alloy: Copper 80 per cent; Tin 10 per cent; Lead 10 per cent (B 74 – 32 T)

Tentative Methods of:

Test for Ductility of Bituminous Materials (D 113 – 32 T)
Test for Residue of Specified Penetration (D 243 – 32 T)
Testing Sheet and Tape Insulating Materials for Dielectric Strength (D 149 – 32 T)
Testing Varnished Cloths and Varnished Cloth Tapes Used in Electrical Insulation (D 295 – 32 T)
Testing Laminated Tubes Used in Electrical Insulation (D 348 – 32 T)
Tension Testing of Metallic Materials (E 8 – 32 T)

Tentative Definitions of:

Terms Relating to Methods of Testing (E 6 – 32 T)

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Directory of Commodity Specifications

A revised edition of the National Directory of Commodity Specifications, first published in 1925, has been issued by the U. S. Bureau of Standards. It lists the standards and specifications of trade associations, technical societies, etc., that are representative in a national way of industry as well as those of Federal agencies which represent the Government as a whole. The classification system used tends to throw together standards relating to the same subjects, thus forewarning the sponsors of a duplication of efforts. A brief summary of each specification is given. Where a commodity's use is not self-evident from the specification title, a brief statement of this is given.

Notes on A.S.T.M. Publications

Proceedings of 1932 Annual Meeting

Excellent progress is being made on the compilation of the 1932 *Proceedings*, which this year, as customary, will be issued in two parts. Part I will contain the committee reports with discussion and all the new and revised tentative standards. Part II comprises the technical papers, with all oral and written discussions, presented at the annual meeting in Atlantic City. It is expected that the two parts will aggregate about 1800 pages.

The discussions which are included with the technical papers in Part II have been carefully edited. They are pertinent and concise and add much to the value of the papers. Part II will include the extensive Symposium on Steel Castings (also to be issued in separate bound form), and the complete report of the investigation of embrittlement of hot-galvanized structural steel. Members should receive their copies of the *Proceedings* early in December.

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1932 Book of Tentative Standards

The 1932 Book of A.S.T.M. Tentative Standards will be printed late this month. This special volume contains all of the tentative standards of the Society in their latest form. 132 of the 226 tentative standards are specifications; the remainder are test methods and definitions of terms. The 1932 issue contains the standards recently accepted as tentative by Committee E-10.

This book is the only publication containing *all* of the A.S.T.M. tentative standards. Most of these are widely used in industry and consequently the book is of great value and is in wide demand. The 1932 Book comprises about 1200 pages, including a complete subject index and a list of all A.S.T.M. standards and tentative standards.

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Edgar Marburg Lecture Printed

The Edgar Marburg Lecture, which this year was entitled "Fundamentals in the Problem of Resistance to Deterioration," read by Prof. Hugh S. Taylor, Head of the Chemistry Department, Princeton University, at the 1932 annual meeting has been printed. All members who requested a copy should have received this. Some additional copies are available and will be sent on request as long as the supply lasts.

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Correction in Cement Testing Methods

Attention is called to a typographical error in the Standard Methods of Sampling and Testing Portland Cement (C 77 – 32). In the description of the method of molding the briquet specimens for the tension test the word "thumbing" was incorrectly printed as "thumping." That thumbing of the mortar is intended as a means of applying pressure to the material in forming the briquet should be obvious, since the description also states that no ramming or tamping shall be used. However, members are kindly asked to indicate this correction in Section 39 of the Standard Methods on page 38 of the 1932 Supplement to Book of A.S.T.M. Standards. The error appears in the third from the last sentence of Section 39.

Special Publications Sponsored by Committees

For several years, certain A.S.T.M. committees have sponsored the publication of special compilations containing data related to the specific field of work of the committee. (These usually comprise the current report of the committee, and all of the A.S.T.M. standards relating to the materials with which the committee is concerned.) In 1923, Committees D-2 and D-13 sponsored such publications, and the current Report of Committee D-2 with all A.S.T.M. standards and tentative standards pertaining to petroleum products and lubricants has been issued annually since that time in special bound form. "A.S.T.M. Specifications and Methods of Test for Textile Materials" sponsored by Committee D-13 is on a biennial or triennial basis.

In 1927, Committee D-9 on Electrical Insulating Materials sponsored the publication of its report together with all A.S.T.M. specifications and tests pertaining to these materials. This publication is issued annually.

This year for the first time Committee C-8 on Refractories has compiled a special publication which includes all A.S.T.M. specifications and test methods relating to refractories and the Manual for Interpretation of Refractory Test Data, comprising 93 pages.

It is interesting to compare the growth of material in the D-2 and D-9 publications. In 1923, the publication of Committee D-2 had 96 pages; the 1932 issue just printed, comprises 286 pages. In 1927, the D-9 publication totalled 132 pages; the 1932 edition includes 236 pages. This growth can be directly attributed to the increased activities of the committees and the large increase in the number of standards.

These special publications are serving a distinct need for a concise reference to all standards in the respective industries. "Petroleum Products and Lubricants" and "Electrical Insulating Materials" are each priced at $1.25 per copy. The "Refractories Manual" is 50 cents per copy.

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Study of Embrittlement

The official report of the extensive investigation on embrittlement of hot-galvanized structural steel presented at the recent annual meeting of the Society has now become available. The investigation sponsored by the Society was conducted at Battelle Memorial Institute and the major portion of the report consists of a paper by Samuel Epstein.

In preparing the report for publication there has been included with the paper the 1932 report of Subcommittee X on Embrittlement Investigation of Committee A-5 on Corrosion of Iron and Steel, certain recommendations for specification requirements, and a Recommended Practice for Safeguarding Against Embrittlement of Hot-Galvanized Structural Steel Products and Procedure for Detecting Embrittlement. The compilation, issued as a special publication, is entitled, "A Study of the Embrittlement of Hot-Galvanized Structural Steel."

The paper by Mr. Epstein, which will appear in the *Proceedings*, is a most comprehensive one comprising some 83 pages. Tables and charts summarize the results of over 3000 physical and chemical tests. The official report contains 109 pages. A combined prospectus and order blank is enclosed with this BULLETIN. Members can use this to order copies at the special price of 75 cents.

National Committee for Trade Recovery

Because of the great importance of the work it is doing, and because this work is of direct concern to many members of the Society, there is given below a résumé of the activities of the National Committee for Trade Recovery. This statement was prepared by Robert D. Kohn, Past-President, The American Institute of Architects, who heads the Executive Committee of the N. C. T. R.

The trade recovery movement, sponsored by the Construction League of the United States, through the agency of its National Committee for Trade Recovery, is undoubtedly one of the most important and far-reaching movements ever undertaken during peace time in our country.

The original purpose of the National Committee was twofold. Its first task was to secure support and action of Congress to provide for Federal credit in the financing of state and local public works. This objective has been accomplished with a considerable measure of success. The Emergency Relief and Construction Act of 1932, formerly known as the Wagner Bill, is now the law of the land.

The National Committee for Trade Recovery, therefore, is now confronted with its second task, which is to carry on an educational campaign to convince public officials and our citizenry in general that trade recovery can be stimulated through the utilization of the moneys now available under the provisions of that act for self-liquidating public works, low cost housing and slum clearance projects.

The National Committee has developed organizations in each of the 48 states to carry on this work. Thirty-five committees are actively engaged, and reports are being received daily of constructive activities in the balance of the states.

The immediate problem is to list self-liquidating public works in each state, and urge or demand that public officials file promptly their applications with the Reconstruction Finance Corporation at Washington for loans on sound public works projects. The Executive Committee of the N. C. T. R. has established and is maintaining contact with the recently appointed Engineers' Advisory Committee of the R. F. C. as well as with the officials of the R. F. C. Board. The American Institute of Architects is cooperating by encouraging the passage of housing laws in various states.

Considerable work is also being done by the various state committees looking to the framing and passage of legislation in the respective states, which will enable the various political subdivisions further to take advantage of the self-liquidating provisions of the act.

The public works program envisioned by the National Committee for Trade Recovery is the biggest peace-time engineering job this nation has ever tackled, and its benefits will undoubtedly be reflected in a substantial construction program throughout the nation, with a corresponding stimulation of business in all lines of industry.

The National Committee invites the cooperation of the architectural and engineering professions and the entire construction industry, as well as the general public, to assist in forwarding its program to stimulate trade recovery.

Complete literature and current information, including a list of our chairmen for the various state committees, are available at the headquarters of the National Committee for Trade Recovery, 330 W. Forty-second St., New York City.

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Society Appointments

Announcement is made of the following appointments:

F. M. Farmer continuing as Society's representative on the American Bureau of Welding.

M. Rea Paul appointed on Federal Specifications Board's Committee on Paint Specifications, to succeed P. H. Cathcart, resigned.

H. W. Maack appointed on A.S.M.E.-A.S.T.M. Joint Research Committee on Effect of Temperature on the Properties of Metals and on the Sectional Committee on Wrought Iron and Wrought Steel Pipe and Tubing, to succeed L. W. Spring, deceased.

Recently Approved A.S.T.M. Standards of Interest in Construction

Of late, a great deal of emphasis has been placed on the vital necessity of adhering rigidly to quality standards. *Engineering News-Record* in a recent issue comments:

"One result of the depression that has already been pointed out is the risk of lower quality of workmanship due to demoralization of the manufacturing personnel. There are numerous reports of difficulty in meeting rather ordinary inspection and of much non-marketable product. Such experiences point the lesson of holding to quality standards at all cost."

This statement and the danger it points out is particularly applicable to the construction industry, where safety and economy demand quality materials. Not only must the "veteran" building materials be up to standard, but the newer modifications of these and entirely new materials should be purchased under practical, safe specifications.

Of the new standard specifications and test methods issued as tentative or adopted by the Society this year, the following are of special interest in the construction field:

Standard:

Methods of Sampling and Testing Portland Cement (C 77 – 32).

Tentative Standards.

Specifications for Structural Medium Steel (A 140 – 32 T).
Specifications for Structural Rivet Steel (A 141 – 32 T).
Specifications for Lap-Welded and Seamless Steel and Lap-Welded Iron Boiler Tubes (A 83 – 32 T).
Specifications for Electric-Fusion-Welded Steel Pipe (Sizes 8 in. to but not Including 30 in.) (A 139 – 32 T).
Specifications for Cast-Iron Culvert Pipe (A 142 – 32 T) .
Specifications for Gray-Iron Castings (A 48 – 32 T).
Specifications for Malleable Iron Castings (A 47 – 32 T).
Specifications for Seamless Copper Tubing, Bright Annealed (B 68 – 32 T).
Specifications for Copper Water Tube (B 88 – 32 T).
Specifications for Aluminum-Copper-Magnesium-Manganese Alloy Bars, Rods and Shapes (B 89 – 32 T).
Specifications for Magnesium-Base Alloy Wrought Shapes (Other than Sheet) (B 91 – 32 T).
Specifications and Tests for Masonry Cement (C 91 – 32 T).
Specifications for Clay Sewer Pipe (C 13 – 32 T).
Specifications for Pure Linseed Oil Putty for Glazing (D 317 – 32 T).
Specifications for Insulated Wire and Cable: Performance Rubber Compound (D 353 – 32 T).
Methods of Testing Gypsum and Gypsum Products (C 26 – 32 T).
Method of Test for Soundness of Fine Aggregates by Use of Sodium Sulfate (C 88 – 32 T).
Method of Test for Soundness of Coarse Aggregates by Use of Sodium Sulfate (C 89 – 32 T).
Method of Test for Consistency of Portland-Cement Concrete (D 138 – 32 T).
Method of Sampling Natural Building Stone and Sample for Testing (D 355 – 32 T).
Method of Tension Testing of Natural Building Stone (D 356 – 32 T).
Methods of Chemical Analysis of Calcium Chloride (D 345 – 32 T).
Method of Test for Comparative Hiding Power of Paints (D 344 – 32 T).

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Addresses Wanted

Anyone knowing the present addresses of the following members, whose last known addresses are given below, are asked to notify the Secretary-Treasurer:

A. R. Adamson, G. G. Blackstock and Co., 25 King St., W., Toronto 2, Ont., Canada.
Richard Henry Ames, Oil Field Engr., Apartado 150, Tampico, Tamps, Mexico.
Edward Clark Barrett, 806 E. Thirteenth St., Brooklyn, N. Y.
Walter M. Mitchell, Sales Engr., Edward G. Budd Mfg. Co., Philadelphia, Pa.
Robert R. Symington, President, Corporate Steel Products, Ltd., Montreal, P. Q., Canada.
S. J. Wagar, Engr. of Tests, Chesapeake & Ohio Ry. Co., Huntington, W. Va.

Personals

News items concerning the activities of our members will be welcomed for inclusion in this column.

JOHN LYLE HARRINGTON of the consulting engineering firm of Harrington and Cortelyou, Kansas City, Mo., and JOHN H. GREGORY, Consulting Engineer, Baltimore, Md., have been appointed by President Hoover on the Board of Engineers which will pass upon the engineering phases of construction projects on which the Reconstruction Finance Corporation has received applications for loans.

W. T. DONKIN, formerly with the Cleveland Wire Spring Co., is now Assistant General Manager, Coil Spring Division, Eaton Manufacturing Co., Detroit, Mich.

C. H. MARSHALL, formerly a member of the Technical Staff, Bell Telephone Laboratories, is now Materials Engineer, Lucius Pitkin, Inc., New York City.

F. B. LYSLE has been appointed Chief of the Bureau of Lighting and Gas, City of Philadelphia.

ERNEST ASHTON is now Chemical Engineer, Medusa Portland Cement Co., Cleveland, Ohio.

WALTER C. KEYS, Consulting Development and Sales Engineer, Detroit, Mich., has been elected to the Council of the Society of Automotive Engineers to fill the vacancy caused by the death of Fred S. Duesenberg.

JOHN J. PORTER, former Vice-President and General Manager of the North American Cement Corp., Albany, N. Y., has been elected President of the corporation, succeeding the late Frederick W. Kelley.

LEWIS S. REID, formerly Chief Engineer of the Magnetic Analysis Corp., has joined the staff of Lucius Pitkin, Inc., as Associate Metallurgist.

E. J. RUTAN, Supervisor of the Test Bureau, New York Edison Co., has been reappointed chairman of the A.I.E.E. Committee on Instruments and Measurements.

W. R. HUEY, formerly with E. I. du Pont de Nemours Co., has instituted a consulting and advisory service at Swarthmore, Pa., covering equipment and materials problems.

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NECROLOGY

We announce with regret the death of the following:

W. L. ELLERBECK, President and Managing Director, Nephi Plaster and Manufacturing Co., Salt Lake City, Utah. Member since 1920. Mr. Ellerbeck was a member of Committees C-7 on Lime, C-11 on Gypsum and C-12 on Mortars for Unit Masonry.

GEORGE J. GLOVER, General Contractor, New Orleans, La. Member since 1909.

R. S. PERRY, President, Georgia-Louisiana Corp., East Point, Ga. Member since 1907. Mr. Perry was a member of Committee D-1 on Preservative Coatings for Structural Materials.

WILLIAM POOLE, General Superintendent, New York Insulated Wire Co., Wallingford, Conn. Member since February, 1932.

FREDERICK W. KELLEY, President, North American Cement Corp., Albany, N. Y. Member since 1910. Mr. Kelley was a very active member of Committee C-1 on Cement. As chairman of the Subcommittee on Cement Reference Laboratory, he did much to inaugurate and insure the success of this important cooperative work with the Government. He was a member of the Subcommittee on High Early Strength Cement and the Subcommittee on Specifications for Portland Cement. Mr. Kelley was also active in the work of Committee C-9 on Concrete Aggregates, being a member of the Advisory Committee and Subcommittee VIII on Permeability Tests. From 1914 to 1916, Mr. Kelley was a member of the Executive Committee of the Society.

N. PETINOT, Assistant to President, Vanadium Corporation of America, New York City. Mr. Petinot was the A.S.T.M. representative of his company.

New Members to October 19, 1932

The following thirty-nine members were elected from June 29 to October 19, 1932:

Company Members (8)

Bakelite Corp., T. S. Taylor, Chief Research Physicist, 230 Grove St., Bloomfield, N. J.
Chace Valve Co., W. M., H D. Matthews, Engr., 1600 Beard Ave., Detroit, Mich.
Canadian Marconi Co., S. M. Finlayson, Factory Manager, Mount Royal, Montreal, P. Q., Canada.
Chesebro, Whitman Co., Inc., Eugene Pitou, President, Sherman, Freeman and Marion Sts., Long Island City, N. Y.
Columbian Iron Works, M. C. Lofton, Secretary and Assistant General Manager, 2501–31 Chestnut St., Chattanooga, Tenn.
Missouri Portland Cement Co., O. F. Schulzke, Chief Chemist, 13th Floor, Telephone Labs., 1010 Pine St., St. Louis, Mo.
Texas Quarries, Inc., C. H. Owens, Vice-President, 618 Scarbrough Bldg., Austin, Tex.
Viber Co., Ltd., G. M. Gordon, President, 1919 S. Hoover St., Los Angeles, Calif.

Individual and Other Members (30)

Baxter, William, Superintendent, Crane Limited, 3800 St. Patrick St., Montreal, P. Q., Canada.
Bird, C. M., General Manager, Hicaco Lime Plant, Jorge Bird Arias, Fajardo, Puerto Rico.
Bostwick, R. C., Salesman, Bond Manufacturing Corp., 501 Monroe St., Wilmington, Del.
Bowie, A. W., Owner, The Ready-Mixed-Concrete Co., 21 Glenwood Ave., Binghamton, N. Y.
Brown, C. Durward, Assistant Engr., Jean H. Knox, 202 Interurban Bldg., Dallas, Tex.
Chace, T. B., Sales Engr., The Dole Valve Co., 1923 Carroll Ave., Chicago, Ill.
DeFee, M. E., Architect, DeFee & White, First National Bank Bldg., Henderson, Tex.
Fernandez Casado, Carlos, Ingeniero de Caminos, Canales y Puertos, Alonso Martinez 5, Madrid, Spain.
Fisher, G. H., Metallurgical Engr., Illinois Steel Co., Room 1372, 208 S. LaSalle St., Chicago, Ill.
Harrington, L. C., Director of School of Mines and Dean of College Eng., University of North Dakota, University Station, Grand Forks, N. Dak.
Heitzman, J. L., Vice-President, E. L. Conwell and Co., 2024 Arch St., Philadelphia, Pa.
Jones, C. A., Director, Textile Eng. Dept., Georgia School of Technology, Atlanta, Ga.
Kowalewski, V. A., Jr., Service Engr., The American Brass Co., 414 Meadow St., Waterbury, Conn.
LeBaron, A. L., Sales Manager, Silver Lake Co., Newtonville, Mass.
Lezama, Antonio, President, Lezama and Co., Rampas de Uribitarte, Bilbao, Spain.
Lindner, K. A., General Superintendent, American Smelting and Refining Co., Maurer, N. J.
Matthews, H. D., Engr., W. M. Chace Valve Co., Detroit, Mich. For mail: 16565 Glastonbury Road, Detroit, Mich.
Merrill, O. C., Chairman, American Committee, World Power Conference, 1419 Chrysler Bldg., New York City.
Philadelphia College of Pharmacy and Science Library, Forty-third St. and Kingsessing Ave., Philadelphia, Pa.
Quinn, T. S., Treasurer, Lebanon Steel Foundry, Lebanon, Pa.
Ruff, S. W., Vice-President, Seymour Ruff and Sons, 2133 Maryland Ave., Baltimore, Md.
Salt Lake City Corp., Engineering Dept., 401 City and County Bldg., Salt Lake City, Utah.
Sanders, W. E., Metallurgical Engr., Buick Motor Co., 1006 Beard St., Flint, Mich.
Shutts, W. C., Engineer of Production, Humble Oil and Refining Co., Houston, Tex.
Stortz, Robert, Assistant Chief Engr., Nash Motors Co., Kenosha, Wis.
Telfer, David, Naval Architect and Surveyor, 1542 Danforth Ave., Toronto, Ont., Canada.
Utah State Road Commission, H. S. Kerr, Chief Engr., Capitol Bldg., Salt Lake City, Utah.
Welch, A. R., Plant Manager, Internat. Combustion Tar and Chemical Corp., 1011 Dover Ave., Dover, Ohio.
Whittier, S. B., Plant Manager, Whittier Mills Co., Chattahoochee, Ga.
Wirth, Charles, III, Supervising Chemist, Universal Oil Products Co., Riverside, Ill.

Junior Member (1)

Beacham, J. G., City Engr. and Superintendent of Water Works, Athens, Ga.

A.S.T.M. Research Activities (1932-1933)

(*Continued from page 2*)

articles on fatigue of metals under repeated stress appearing in the technical press from July 1, 1928, to June 30, 1930. For a brief statement of the present status of knowledge and current theory in the field of fatigue of metals, see *Proceedings*, Vol. 30, Part I, p. 259 (1930). See also preprint, 1932 Report of Research Committee, containing summary of knowledge on corrosion-fatigue and on significance and limitations of fatigue test results.

Effect of Temperature on the Properties of Metals (Joint Research Committee of the A.S.M.E. and A.S.T.M.).—The scope of these investigations includes (1) an accumulation of service data of various metals under extreme temperatures; (2) studies leading to standardization procedure for testing metals at high and low temperatures; and (3) outlining and fostering new research work in this field, giving consideration first to the various metals and alloys intended for high-temperature service in power stations, oil refineries, etc. See report of Joint Committee for 1931, *Proceedings*, Vol. 31, Part I, p. 106 (1931), containing report of Committee III on Projects and Work outlining program.

Sponsored and cooperative researches summarized in 1932 report which contains reports on (1) correlation of tension, creep and fatigue properties of 0.17 per cent carbon boiler steel at elevated temperatures; (2) a cooperative study of the Charpy notched-bar impact tests and magnetic permeability tests, and on structural stability of the 18 per cent chromium, 8 per cent nickel "stainless steels" under different conditions of treatment, see *Proceedings*, Vol. 32, Part I (1932). A paper by H. W. Gillett and H. C. Cross on "Variations and Variables in Cooperative Creep Testing of a Chromium-Molybdenum Steel," comprising a third investigation, will appear in A.S.M.E. *Transactions*, 1933.

Attention is also called to the Symposium on Effect of Temperature on the Properties of Metals held at the 1931 annual meeting and sponsored by the Joint A.S.M.E.-A.S.T.M. Research Committee. Symposium published, contains 27 papers with discussion.

X-ray Metallography (Committee E-4).—A study of the applications of the X-ray (1) in the location of cavities and cracks and other structural variations in metals (metal radiography); (2) to determine the arrangement of atoms or molecules in crystals, size of grain in crystalline aggregates and the orientation of such crystalline material (X-ray crystallography). See *Proceedings*, Vol. 25, Part I, p. 444 (1925); also preprint, 1932 Report of Committee E-4.

Cement

Study of Strength Tests of Cement (Committee C-1).—Tests of portland cement and correlation of researches with strength properties of concrete. See "Tentative Outline of Test Procedure for Cooperative Plastic Mortar Tests," *Proceedings*, Vol. 29, Part I, p. 266 (1929); also Vol. 30, Part I, p. 437 (1930), containing results of cooperative tests of four portland cements.

Effect of Temperature of Cement on Use (Committee C-1).—Study of results of all published investigations on effect of temperatures of cement at time of use, including study of data and experiences from cases in which cement temperatures were limited. Further investigations being encouraged. Extensive report made including digest of data with results obtained and conclusions. See preprint, 1932 Report of Committee C-1.

Concrete

Studies of Designing and Proportioning of Concrete (Committee C-9).—Analyzing the existing data on various theories of preparing concrete mixtures and of developing an adequate theory of design, including method of proportioning. See *Proceedings*, Vol. 31, Part I, p. 322 (1931).

Studies of Concrete Aggregates (Committee C-9).—A study of the various properties of aggregates for concrete, including soundness, resistance to abrasion, absorption and influence of shape, fineness and soft particles on quality of concrete; also freezing-and-thawing tests. See preprint, 1932 Report of Committee C-9 containing proposed method of testing concrete and concrete aggregates by freezing and thawing; also revisions in soundness test methods.

Deleterious Substances in Concrete (Committee C-9).—A study of the various naturally or accidentally occurring materials in concrete which may effect it deleteriously. Progress report, see *Proceedings*, Vol. 29, Part I, p. 295 (1929); containing two papers: "Effect of Flat Particles on Concrete-Making Properties of Gravel," by Stanton Walker and C. E. Proudley; and "Effect of Coal and Lignite in Sand for Concrete" by P. J. Freeman.

Curing of Concrete (Committee C-9).—Coordination and study of results of investigations of the curing of concrete, looking ultimately to recommended methods of practice or specifications for curing. Extensive report containing 5 specifications for curing portland-cement concrete including curing with bituminous coverings, calcium chloride admixture, surface application of calcium chloride, and wet coverings. Also report on curing of portland-cement concrete with special reference to curing of pavement slabs containing "Digest of Available Information on the Use of Calcium Chloride for Curing Concrete;" also "Digest on Effect of Curing Methods on Strength of Concrete." See *Proceedings*, Vol. 31, Part I, p. 322 (1931).

Workability of Concrete (Committee C-9).—A study of the significance and methods of determining workability of concrete. See *Proceedings*, Vol. 29, Part I, 297 (1929).

Admixtures in Concrete (Committee C-9).—A general study of admixtures which may be added to concrete for the purpose of improving some of its properties. Progress report, see *Proceedings*, Vol. 29, Part I, p. 305 (1929), containing a summary of manufacturers' data, on various commercial admixtures.

Elastic Properties of Concrete (Committee C-9).—Studies of the elastic properties of concrete of different mixtures at different ages under different conditions of moisture, the effect of different aggregates, a determination of the modulus of elasticity of concrete in tension, establishment of Poisson's ratio, and of the effect of application of loads, including loads applied suddenly or with impact; also studies of the form of specimens, type of bearing, rate of application of load, sensitivity of measuring devices, etc. See preprint of paper "Volume Changes of an Early-Strength Concrete" by E. R. Dawley, presented in 1932.

Permeability of Concrete (Committee C-9).—Study of the literature followed by studies of various methods and apparatus. Investigation just started, see *Proceedings*, Vol. 31, Part I, p. 332 (1931).

Conditions Affecting Durability of Concrete in Structures (Committee C-9).—Study of the conditions under which concrete has not been durable. It will emphasize the precautions which must be taken to produce good concrete, whether in methods, material or workmanship. Studies of freezing-and-thawing tests. For report on the examination of concrete structures in Ontario and Quebec together with observations and conclusions, see *Proceedings*, Vol. 30, Part I, p. 686 (1930). A suggested terminology applying to the study of concrete structures in service prepared, see *Proceedings*, Vol. 31, Part I, p. 322 (1931). See preprint, 1932 Report of Committee C-9 containing proposed method of testing concrete and concrete aggregates by freezing and thawing.

Gypsum and Masonry Materials

Properties of Gypsum Fiber Concrete (Committee C-11).—A study of strength, elasticity and other properties of concrete formed from wood chips and gypsum. See *Proceedings*, Vol. 30, Part I, p. 719 (1930), containing extensive report on "Properties of Gypsum Fiber Concrete."

Weathering Characteristics of Masonry Materials.—Study of the weathering characteristics of such masonry materials as brick, concrete, hollow masonry building units, slate and building stone.

NOTE.—The work of Committees C-3, C-9, C-10, D-16 and D-18, in the study of weathering characteristics and development of accelerated weathering tests is being coordinated through the Coordinating Committee on Weathering Characteristics. Symposium on Weathering Characteristics of Masonry Materials held in 1931, see *Proceedings*, Vol. 31, Part II, p. 715 (1931).

Paint and Paint Materials

Preparation of Iron and Steel Surfaces for Painting (Committee D-1).—Study of influence of various methods of preparing iron and steel surfaces upon the life of painted sheets, under atmospheric exposure. See *Proceedings*, Vol. 29, Part I, p. 341 (1929).

Anti-Corrosive and Anti-Fouling Paints (Committee D-1).—Study of the value of various anti-corrosive and anti-fouling paints. Report on two series of tests, see *Proceedings*, Vol. 27, Part I, p. 430 (1927). Further studies will include exposure tests in tropical waters. As a result of investigations, standard specifications for the toxic ingredients in anti-fouling paints, and standard methods of routine analysis of dry cuprous oxide and of dry mecuric oxide were developed, see 1930 Book of A.S.T.M. Standards, Part II and 1931 Supplement.

Physical Properties of Paint Materials (Committee D-1).—Study of the physical problems connected with paints and paint materials. Viscosity and plasticity of paints, color and optical properties of paints and paint materials have first been considered. Work on tests for color resulted in methods of analysis for the color characteristics of paints in terms of fundamental physical units. See *Proceedings*, Vol. 29, Part I, p. 342 (1929).

Study of Hiding Power and Tinting Strength of Paint Pigments and Paints (Committee D-1).—Scope of investigation covered by title. See "Report of Cooperative Work on the Determination of Tinting Strength of Pigments" and method of test for tinting strength of white pigments, *Proceedings*, Vol. 31, Part I, pp. 447, 797 (1931); also "Cooperative Work on the Determination of Hiding Power of Wet Paints," and method of test for comparative hiding power of paints, Vol. 32, Part I (1932). Several papers also of interest with this project: See *Proceedings*, Vol. 30, Part II, pp. 878 to 910 (1930); also Vol. 31, Part II, pp. 860 to 881 (1931).

Slate

Abrasive Hardness of Slate.—To determine the wearing qualities of slate when used in floors, treads, etc. (Committee D-16). See *Proceedings*, Vol. 30, Part I, p. 883 (1930).

Properties of Electrical Slate.—Study of the physical properties of slate for use in electrical work (Committee D-16). See *Proceedings*, Vol. 30, Part I, p. 884 (1930).

Rubber Products

Abrasion Test for Rubber Products (Committee D-11).—Consideration of abrasion tests for application to those rubber products where abrasion in service is the most important element in determining the life of the material, such as conveyor belting, automobile tires, rubber-covered air and and water hose, rubber heels, etc. See preprint, 1932 Report of Committee D-11; also Symposium on Abrasion Testing of Rubber Products, *Proceedings*, Vol. 31, Part II, p. 895 (1931).

Life Test for Rubber Products (Committee D-11).—Accelerated aging test of various types of rubber compound in comparison with natural aging of the same samples. Extensive tests completed, see preprint, 1932 Report of Committee D-11.

Dynamic Fatigue Testing for Rubber Products (Committee D-11).—To study the general field indicated in title and particularly as applied to repeated extension, bending and similar tests. Studying separation tests on plied rubber and fabric materials; also methods of flex testing rubber stock without fabric. See preprint, 1932 Report of Committee D-11.

Shock Absorption of Rubber Products (Committee D-11).—Study, development and standardization of methods of test which are particularly suitable in the evaluation of rubber stocks for shackles, motor supports, bumpers and shock insulators. Studying effect of repeated compression on rubber compounds, also flow properties of rubber and adhesion of rubber to metals. Tentative method of test for hardness of rubber developed. See preprint, 1932 Report of Committee D-11.

Part II—Research on Methods of Testing

Ferrous and Non-Ferrous Metals

Alternating Current Tests at Low Inductions (Committee A-6).—Tests of magnetic materials used in apparatus operating at high frequencies (audio frequencies) and low inductions such as core materials for audio-frequency transformers, chokes, etc. Tentative procedures for low induction tests prepared, see preprint, Report of Committee A-6 for 1932 annual meeting.

Tests at High Magnetizing Forces (Committee A-6).—Development of test methods operating at high magnetizing forces in order to test materials such as the new high-cobalt steels. Tentative procedures for tests at high magnetizing forces prepared, see preprint, 1932, Report of Committee A-6.

Electrical Tests of Heating and Resistance Alloys (Committee B-4).—Studies of methods of test for thermoelectric power of materials and for temperature coefficient of resistance are being carried on. Method in preparation for making the resistance measurements within the accuracy of the new test for determining temperature-resistance constants, see *Proceedings*, Vol. 31, Part I, p. 732 (1931). Test developed for thermoelectric power, see *Proceedings*, Vol. 30, Part I, p. 1013 (1930). Progress report, see preprint, 1932 Report of Committee B-4.

Mechanical Tests of Heating and Resistance Alloys (Committee B-4).—Investigations of a test for uniformity of temper of wire by means of stretch of a helical coil; also a bend test to determine elastic properties of metals and alloys at high temperatures. Tests for thermal conductivity, tests for thermal coefficient of linear expansion, and a study of warpage to determine its relation to thermal expansion and heat conductivity. See preprint, 1932 Report of Committee B-4.

Tests for Evaluating Thermostatic Metals (Committee B-4).—Survey of methods of tests for the thermostatic metals; also preparation of units and definitions of terms. See preprint, 1932 Report of Committee B-4.

Determination of Proportional Limit of Light Alloys (Committee B-7).—Tests to find the best method of determining the proportional limit for cast and wrought light alloys. Work just started, no report available.

Thermal Analysis of Metals (Committee E-4).—Study of thermal analysis of metals, including methods of testing. Resulted in the development of tentative recommended practice for thermal analysis of steel, see *Proceedings*, Vol. 30, Part I, p. 1259 (1930).

Lime

Determination of Soundness of Lime (Committee C-7).—A study of a new method for determining soundness of lime particularly adapted to limes used for plastering. Experimental work at U. S. Bureau of Standards. See preprint, 1932 Report of Committee C-7.

Determination of Plasticity of Hydrated Lime (Committee C-7).—Further research on Society's method for determining the plasticity of hydrated lime. See preprint, 1932 Report of Committee C-7.

Refractories

Abrasion of Refractories at High Temperatures (Committee C-8).—Substantially as stated by title. Fire-clay brick manufactured by several different processes as well as standard silica, magnesite and chrome refractories have been tested at room temperatures and at 1000° C. and 1350° C. See *Proceedings*, Vol. 31, Part I, p. 312 (1931).

Load Test of Refractories (Committee C-8).—A study of variables encountered in performing the load test on refractories at elevated temperatures. Survey of various furnaces and their operating conditions under way, data being collected. See preprint, 1932 Report of Committee C-8.

Cold Crushing of Fire-Clay Brick (Committee C-8).—Investigation of crushing strength of fire-clay brick in three directions, namely, flat, on edge and endwise, to obtain data for developing a cold crushing test. Flexural strength and porosity also determined in order to study what relation, if any, exists between these properties. See *Proceedings*, Vol. 30, Part I, p. 476 (1930).

Pyrometric Cone Equivalent (P.C.E.) Test for Refractories (Committee C-8).—Investigation of uniformity and dependability of P.C.E. results obtained with air-gas, oxygen-acetylene and granannular carbon resistance furnaces in order to standardize the furnace for making P.C.E. determinations. See preprint, 1932 Report of Committee C-8.

Service Spalling Test of Refractories (Committee C-8).—Study of a service spalling test for refractories that will measure resistance to a variety of factors causing spalling such as vitrification produced by time, temperature and slag coatings and to learn the effect of varying the temperature and rate of cooling. See *Proceedings*, Vol. 29, Part I, p. 284 (1929).

Microstructure and Petrographic Studies of Refractories (Committee C-8).—Substantially as covered by title. Investigation just started, see *Proceedings*, Vol. 31, Part I, p. 312 (1931).

Heat Transfer of Refractory Materials (Committee C-8).—Study of methods of determining and of expressing thermal conductivity. Studies will be made not only on high-temperature refractories but also on materials commonly classed as heat insulators. To formulate standards to measure the different physical properties of refractory heat insulating materials in addition to their characteristic property of retarded heat transfer. See preprint, 1932 Report of Committee C-8.

Shrinkage of Clay Refractories (Committee C-8).—Studies of effect of rate of drying and rate of heating in the draw trial test for measuring clay shrinkage. See preprint, 1932 Report of Committee C-8.

Concrete

Methods of Analyzing Concrete (Committee C-9).—Development of test methods for the quantitative determination of the constituents of concrete. See 1931 Report of Committee C-9 containing tentative method of routine analysis of the cement content of hardened portland-cement concrete with supporting data in paper by H. F. Kriege "Determining the Cement Content of Set Concrete by Chemical Methods of Analysis," also a proposed method of test for the field determination of the constituents of fresh concrete and paper by W. M. Dunagan "A Study of the Analysis of Fresh Concrete," see *Proceedings*, Vol. 31, Part I, pp. 763, 386, 362, 383 (1931).

Field Tests for Concrete (Committee C-9).—Standardization of methods of making field specimens, including sampling of the concrete when soft, the methods of sampling hardened concrete, and the development of field tests for concrete. Investigation of the relations that may exist between the strengths of test specimens of different forms and dimensions. Relation between the compressive strength of test cylinders made in accordance with the A.S.T.M. standard method and prisms removed from slabs of the same mix. Investigations of methods of transverse testing led to development of tentative method, see *Proceedings*, Vol. 31, Part I, p. 767 (1931).

Gypsum

Consistency of Gypsum Plaster (Committee C-11).—To determine the suitability of the Vicat apparatus and the present standard procedure used for neat gypsum plaster for determining the consistency of gypsum ready-sanded and gypsum wood-fibered plasters. See preprint, 1932 Report of Committee C-11 containing revised methods of testing gypsum.

Time of Set of Gypsum Neat Plaster (Committee C-11).—A study to determine whether the use of a positive accelerator of constant composition used without sand in determination of time of set of gypsum neat plaster is to be preferred to the present method which employs standard testing sand. See *Proceedings*, Vol. 31, Part I, p. 436 (1931).

Volume Changes in Neat Gypsum and Gypsum Fiber Concrete (Committee C-11).—Study of methods for determination of volumetric changes in neat gypsum and gypsum fiber concrete under varying temperature and humidity changes. No report.

Sand Content of Set Gypsum Plaster (Committee C-11).—Investigation of the method for determining sand content of set gypsum plaster by the use of sodium chloride solution. See *Proceedings*, Vol. 31, Part I, p. 436 (1931).

Protective Coatings

Accelerated Tests for Protective Coatings (Committee D-1).—A study of accelerated weathering tests for such protective coatings as house paints, enamels, varnishes and lacquers; also correlation of the results with outdoor exposure tests. See preprint, 1932 Report of Committee D-1.

Petroleum Products and Lubricants

Melting Point of Grease (Committee D-2).—The pressure-flow relationship of greases at various temperatures, approaching what is commonly known as the melting point, is being studied. See *Proceedings*, Vol. 30, Part I, p. 760 (1930).

Oxidation at High Temperatures (Committee D-2).—Study of a high-temperature oxidation test whose function is to produce in an oil, as rapidly as possible, changes of the same kind as would normally take place during long periods of actual service. Study of reproducibility of Sligh oxidation test. Two series of tests already carried out with the Sligh oxidation equipment (see *Proceedings*, Vol. 28, Part I, p. 457 (1928)).

Classification of Transmission Lubricants and Automotive Greases (Committee D-2).—An attempt is being made to determine the relationship between viscosity of transmission lubricants under pressure and gear shifting in cold weather; also classification of automotive greases based upon consistency and viscosity of mineral oil content. No report available.

Crankcase Dilution (Committee D-2).—Tests on used crankcase oils by two different methods, a vapor-temperature method and steam-distillation method have been made, see *Proceedings*, Vol. 29, Part I, p. 373 (1929). Work on steam-distillation method resulted in tentative method for dilution of crankcase oil, see *Proceedings*, Vol. 30, Part I, p. 782 (1930).

Evaluation of Crude Petroleum (Committee D-2).—Study and development of apparatus and procedures for the more or less complete evaluation of crude petroleum. Determination of gravity of crude petroleum on dry (water-free) basis. Investigation just started, see *Proceedings*, Vol. 31, Part I, p. 461 (1931).

Flash Point (Committee D-2).—Consideration is being given to the determination of a flash point method for cut-back asphalts and similar products. Not yet reported upon.

Pour Point of Cylinder Stocks and Black Oils (Committee D-2).—A study of anomalous behavior of certain oils in determining pour point by A.S.T.M. Method D 97 – 30. Current report contains paper by R. W. Moore and L. C. Beard, Jr., on "A Microscopic Study of Certain Oils Which Show the Phenomenon of High and Low Pour Points," see D-2 Pamphlet; also *Proceedings*, Vol. 32, Part I, (1932).

Corrosion Tests for Lubricating Oils (Committee D-2).—Substantially as covered by title. Work being organized.

Gum in Gasoline (Committee D-2).—Investigative study of determining gum in gasoline by various methods and behavior of fuels in service; also the gum stability of gasoline. See preprint, 1932 Report of Committee D-2 containing two proposed methods for gum in gasoline.

Vapor Lock of Motor Fuels (Committee D-2).—Study of vapor locking characteristics of motor fuels. An attempt being made to correlate data obtained by method of test for vapor pressure of natural gasoline (Reid method) with vapor locking characteristics. See preprint, 1932 Report of Committee D-2.

Bituminous Materials

Method of Separation of Cut-Back Asphalt (Committee D-4).—Studies of various methods for the separation of cut-back asphalts to determine the amount and character of the base and cut-back. Results reported on tests using an atmospheric distillation method and procedure involving both atmospheric distillation and distillation in a vacuum. See *Proceedings*, Vol. 30, Part I, p. 801 (1930).

Extraction of Bituminous Aggregates (Committee D-4).—Investigation of methods for the analysis of all classes of bituminous paving mixtures for highway purposes. Results of cooperative tests of fine aggregate type mixtures by four methods reported, see *Proceedings*, Vol. 32, Part I (1932).

Accelerated Weathering Tests of Bituminous Roofing Materials (Committee D-8).—Study of an electrical accelerated weathering test applicable to roofing. Results reported on two types of asphalts, see preprint, 1932 Report of Committee D-8.

Refined Ductility Tests for Bituminous Roofing Materials (Committee D-8).—Substantially as covered by title. Results reported, *Proceedings*, Vol. 31, Part I, p. 508 (1931), on four types of asphalts have been carefully reviewed and conclusions drawn, see preprint, 1932 Report of Committee D-8.

Tests of Bituminous Emulsions (Committee D-8).—Investigations of testing methods for bituminous emulsions used for waterproofing generally, whether vertical or horizontal, and with or without membranes. Work recently started, no report available.

Tests of Bituminous Joint Compounds for Sewer Pipe (Committee D-8).—Substantially as covered by title. Work being carried on at University of Illinois. No report available.

Timber

Fire Tests of Lumber (Committee C-5).—Development of standard methods of conducting fire tests of lumber applicable to treated lumber and lumber in its natural state. Proposed method of test for fire-retardant treated wood developed; studies also being made of crib and timber tests. See preprint, 1932 Report of Committee C-5.

Fireproofing of Timber (Committee D-7).—Study of various methods for making timber fire resistive. This is a new investigation not yet reported upon and is related to the development of fire tests of lumber mentioned above.

Moisture in Timber (Committee D-7).—Consideration of methods for making two types of moisture determinations applicable to timber, the first an accurate method for laboratory use and the second a method sufficiently accurate and practical for field use. Proposed methods of test for determination of moisture in timber for use in the laboratory developed in 1929, see *Proceedings*, Vol. 29, Part I, p. 422 (1929). Rapid moisture indicating apparatus for field use being developed, see *Proceedings*, Vol. 31, Part I, p. 502 (1931).

Coal and Coke

Sampling of and Tolerances for Coal (Committee D-5).—A series of sampling experiments to test the accuracy of the present standard method for collecting and reducing gross samples of coal. Experiments will consist of both hand and machine sampling methods and will be made on a number of different coals varying in size, ash content and distribution. No report.

Agglutinating Value of Coal (Committee D-5).—A study of the various factors which influence the agglutinating value test of coal with a view to standardizing the test. Not yet reported.

Pulverizing Characteristics of Coal (Committee D-5).—Investigation of laboratory methods to determine comparative pulverizing characteristics of different coals in connection with their commercial pulverization as powdered coal. See *Proceedings*, Vol. 29, Part I, p. 390 (1929).

Foundry Coke Specifications (Committee D-5).—Investigation of physical properties of foundry coke which affect its performance in the cupola with a view to evaluating desirable physical properties for inclusion in specifications. See 1931 Report of Committee D-5 containing paper by R. M. Fowler "Stability Tests on Semet-Solvay Coke for Standard Sample," *Proceedings*, Vol. 31, Part I, p. 494 (1931).

Friability of Coal (Committee D-5).—Experimental work on methods for determining friability of coal. Not yet reported.

Electrical Insulating Materials

Tests of Insulating Varnishes (Committee D-9).—Investigation and development of the following methods for varnish films: Relation of drying and baking time to dielectric strength; hardness and oil resistance; acid and alkali resistance; and insulation resistance. See preprint, 1932 Report of Committee D-9.

Tests of Molded Insulating Materials (Committee D-9).—Investigation of methods of measuring impact fatigue of molded phenol plastics, and studies of dimensional tolerances suitable for phenol plastic impact test specimens and of the effect of moisture content on impact and transverse strength of phenol plastic test specimens. Investigation of the effect of the type of mold used on the physical strengths of plastic molded test specimens. Also tests for density and particle size of molding powders and plasticity and cure tests. See preprint, 1932 Report of Committee D-9.

Tests of Insulating Papers and Fabrics (Committee D-9).—Investigation and development of methods and apparatus for testing insulating papers, as follows: Procedure for measuring thickness; instruments for determining tearing strength and folding endurance; tests for moisture in impregnated cable paper; acidity tests and air resistance of insulating paper. Development of methods of test for condenser paper and preparation of preliminary specifications. Methods for thickness and deterioration developed, see preprint, 1932 Report of Committee D-9.

Tests of Insulating Sheets, Tubes and Rods (Committee D-9).—The following studies of laminated sheet insulating materials are being conducted: Method for determining compressibility as a function of time; methods of measuring the modulus of elasticity in compression; the effect of temperature variations on water absorption; effect of humidity on dielectric strength and on flexural strength; also impact fatigue tests, arc resistance, bonding strength, punching quality and insulation resistance tests. Adaptation of methods now used in testing sheet insulating materials to the testing of laminated rods and tubing. See preprint, 1932 Report of Committee D-9.

Tests of Liquid Insulation (Committee D-9).—Development of tests primarily applicable to circuit breaker oils, such as the determination of gas formed during arc-over, measurement of carbon formed and precipitated during arc-over, and a test for amount of water precipitated or emulsified during arc-over; also low-temperature viscosities. Studies of the following tests of insulating oils: Neutralization value of both new and used oils; resistance of insulating oils to oxidation (sludge tests), tests for moisture content and for saponification value. Accurate methods for sampling both used and unused insulating oils also under consideration. Proposed electrometric methods for determination of neutralization number of mineral insulating oils developed. See preprint, 1932 Report of Committee D-9.

Tests of Insulating Compounds (Committee D-9).—Investigation of methods of test for insulating compounds including: coefficient of expansion; determination of insulation-resistance temperature characteristics; specimens and tests for dielectric strength; also viscosity tests of high melting asphaltic compounds. See preprint, 1932 Report of Committee D-9.

Power Factor and Resistivity of Insulating Materials (Committee D-9).—Development and preparation of test methods for measuring dielectric constant and power factor of liquid insulation and of solid insulating materials. Present studies cover methods for power factor at 60 cycles and at 10 to 20 megacycles; also work on thermal conductivity. Methods for power factor and dielectric strength at 1000 cycles developed, see preprint, 1932 Report of Committee D-9.

Tests of Mica Products (Committee D-9).—Study of methods covering mica for capacitor manufacture and built-up pasted mica for general insulating purposes. Tentative methods prepared for grading natural mica according to size, commercial quality and thickness; also methods of testing pasted mica. See preprint, 1932 Report of Committee D-9.

Tests of Ceramic Insulating Materials (Committee D-9).—Investigations incident to tests of insulating porcelain and glass. See preprint, 1932 Report of Committee D-9.

Textile Materials

Methods of Testing Cotton (Committee D-13).—Study of flexing resistance, repeated stress and strength of cotton yarns; also studies of shrinkage tests of light and medium cotton fabrics. See preprint, 1932 Report of Committee D-13.

Tests of Rayon Fabrics (Committee D-13).—Studies of tension test for wet specimens, cloth fraying test, washability test; also methods to determine pulling at seams, slippage of fabrics, and oil and moisture contents of oiled rayons. See preprint, 1932 Report of Committee D-13.

Tests of Silk Textiles (Committee D-13).—Studies of methods of examination and classification of broad silks, determining metallic weighting and water-soluble finishing materials; also twist and take-up tests. See preprint, 1932 Report of Committee D-13.

Tear Resistance and Thickness Tests of Textile Fabrics (Committee D-13).—As covered by title. Procedure for tear resistance developed, see *Proceedings*, Vol. 30, Part I, p. 859 (1930).

Abrasion Test of Textile Fabrics (Committee D-13).—A comprehensive study of abrasion test methods and machines is being made. See *Proceedings*, Vol. 31, Part I, p. 558 (1931).

Moisture Regain of Textiles and Methods of Measuring Relative Humidity (Committee D-13).—Studies of moisture regain of such textile materials as fabrics, yarns, raw cotton, wool and rayon. The effect of moisture on elongation of tire cord being studied. See preprint, 1932 Report of Committee D-13. Tentative method developed for determining relative humidity, see *Proceedings*, Vol. 31, Part I, pp. 565, 1005 (1931).

Magnetic Iron Content of Asbestos (Committee D-13).—Studies are contemplated to determine the amount of magnetic iron in asbestos. See preprint, 1932 Report of Committee D-13.

Sizing Contents of Cotton Tapes and Method of Determining Their Acidity and Alkalinity (Committee D-13).—As covered by title. See preprint, 1932 Report of Committee D-13.

Slate

Absorption of Slate (Committee D-16).—A study of methods of determining the absorption of slate and of the relation of the effects of drying on the strength and elasticity. Work completed and final results reported, resulting in adoption of method of test for water absorption of slate with revisions, see *Proceedings*, Vol. 31, Part I, p. 574 (1931).

Miscellaneous Subjects

Study of Very Finely Sized Material (Committee E-1).—Development of methods of procedure for particle size determination of particulate substances such as powdered coal, cement, pigments, by means of liquid elutriation and direct microscopic observation using filar micrometer. Proposed method of particle size determination developed, see *Proceedings*, Vol. 30, Part I, p. 919 (1930); also preprint, 1932 Report of Committee E-1.

Bend Test for Metals (Committee E-1).—Study of a bend test for ductility of metals consisting in evaluating the measurement of outside fiber elongation at point of maximum bending. Tentative method of bend testing developed, see *Proceedings*, Vol. 31, Part I, p. 1034 (1931); also Vol. 29, Part I, p. 492 (1929).

A General Study of Methods of Determining Consistency and Plasticity (Committee E-1).—The committee is cooperating with various agencies in the development of suitable standards for viscosity and study of various apparatus and methods. See *Proceedings*, Vol. 30, Part I, p. 900 (1930); also preprint, 1932 Report of Committee E-1.

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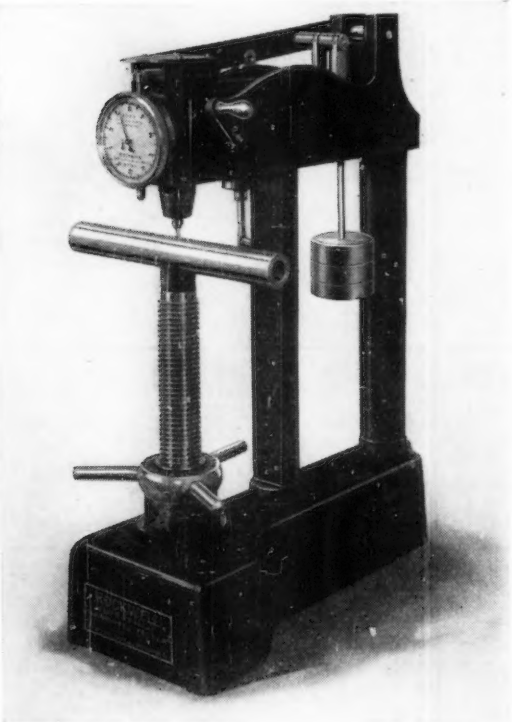

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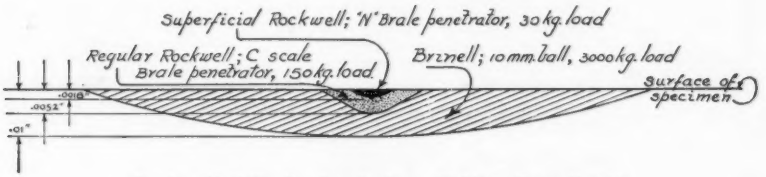

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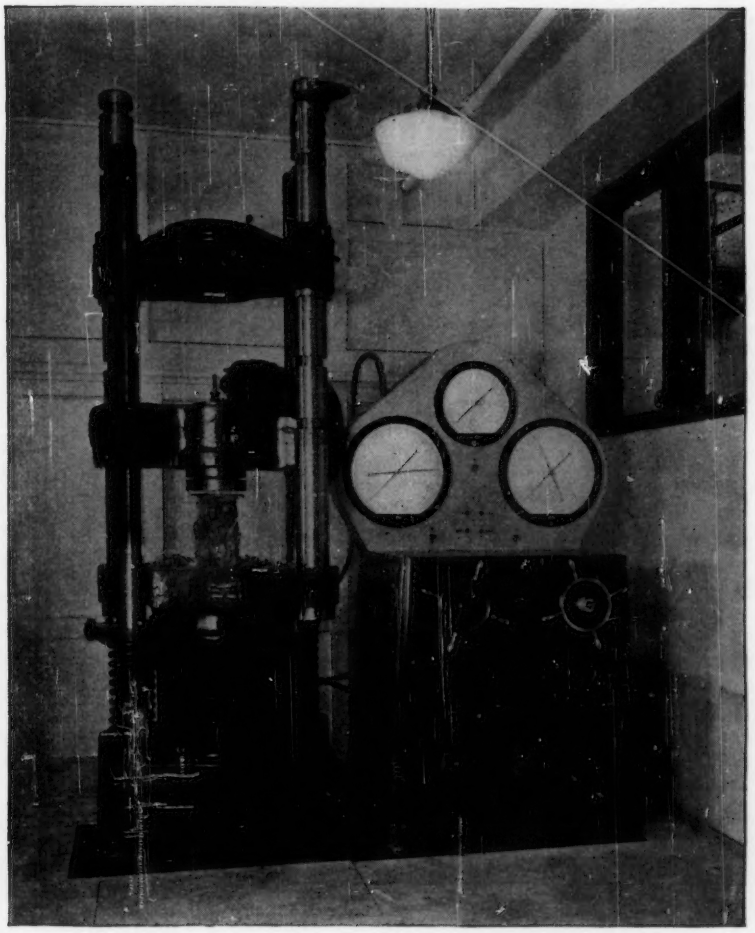

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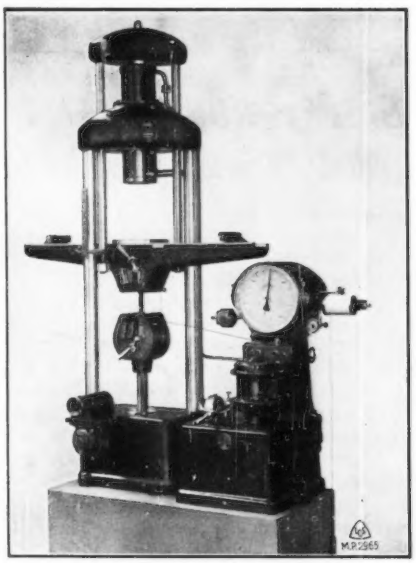

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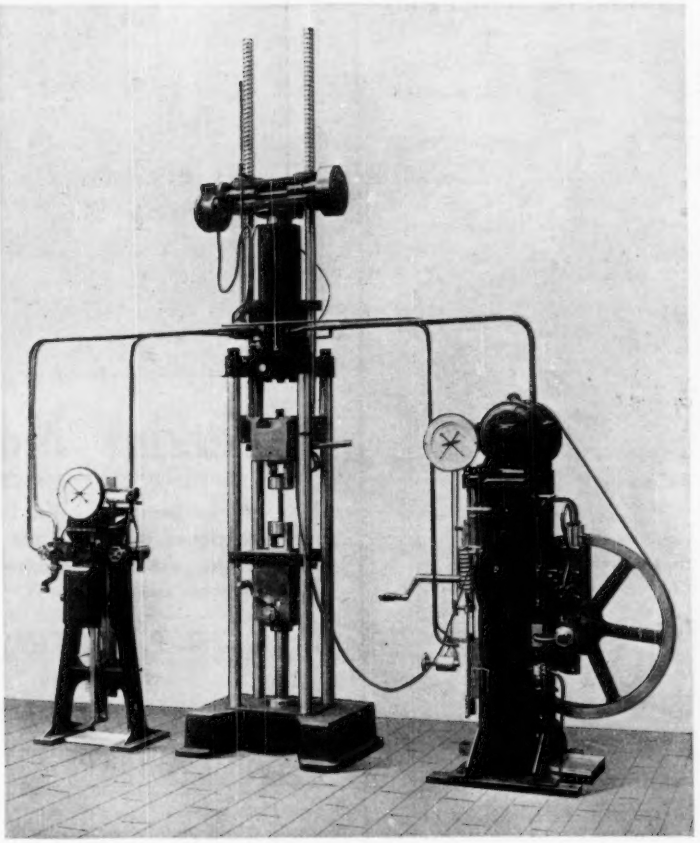

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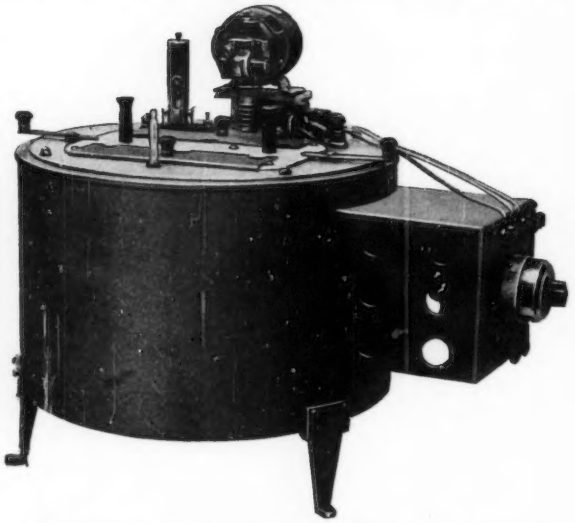

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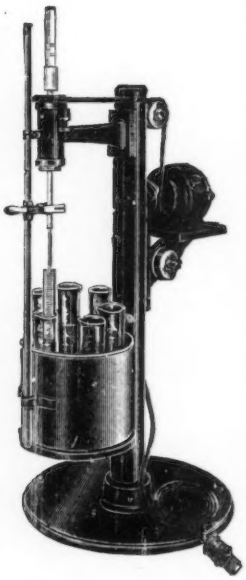

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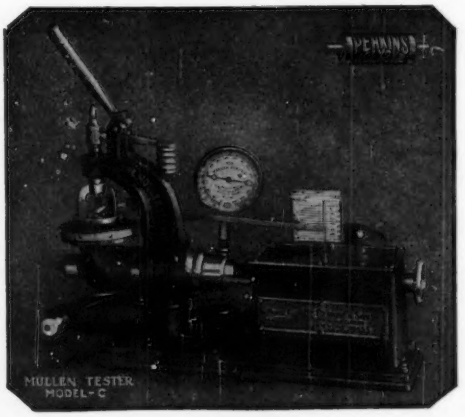

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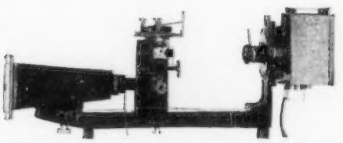

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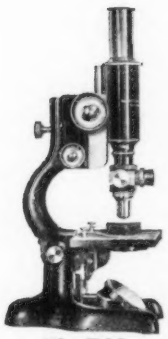

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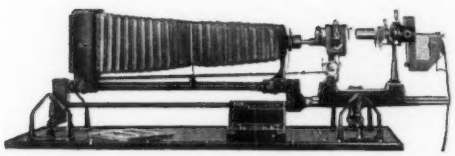

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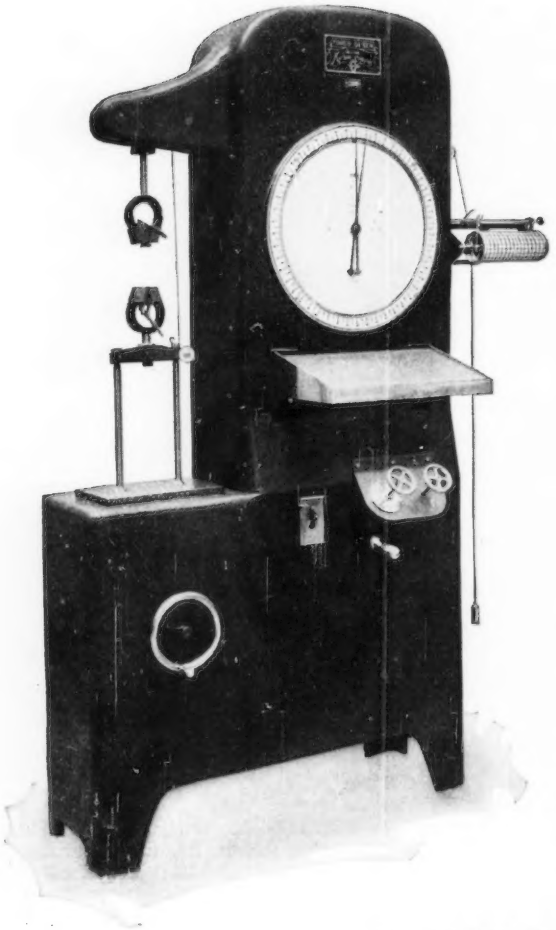

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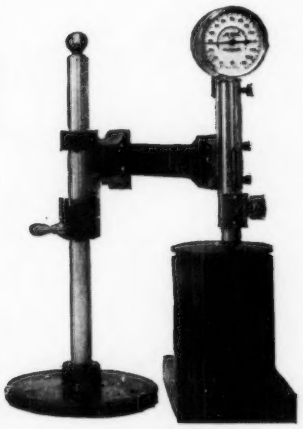

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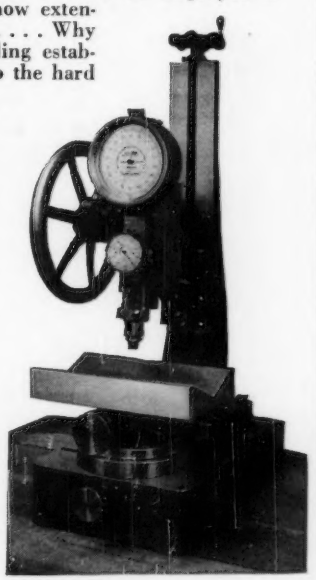

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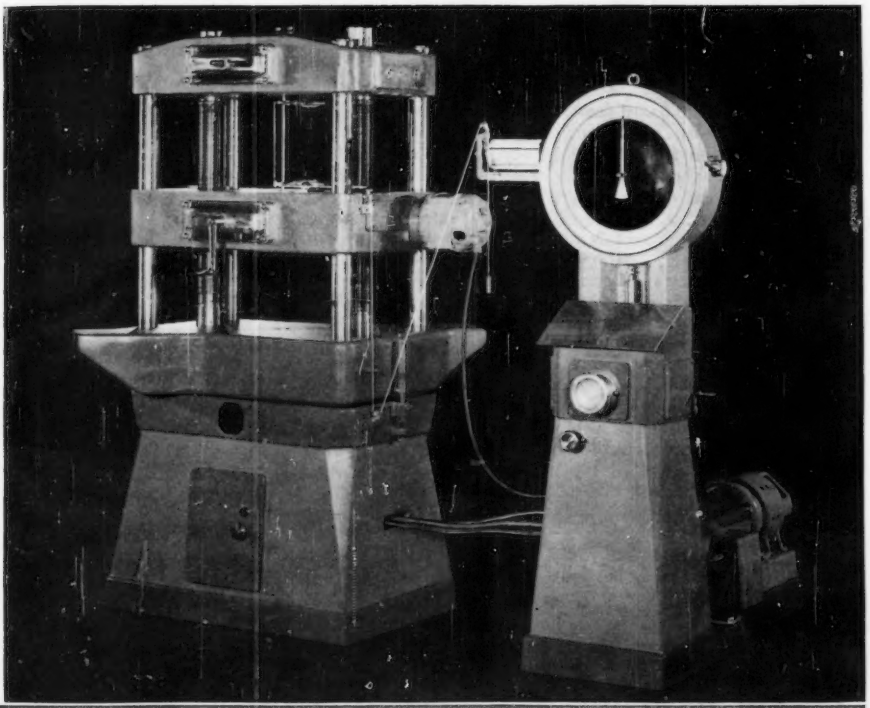

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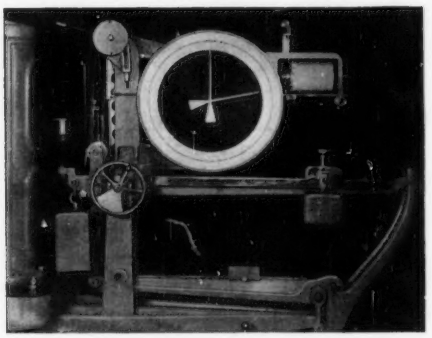

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